CLAIMS

What is claimed is:

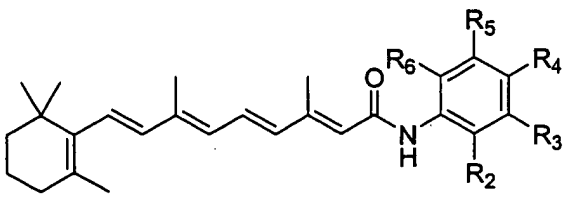
1. A method of preparing an arylretinamide comprising:
   a) reacting hexachloroacetone with a solvent-suspended resin-bound triphenylphosphine to provide a suspension comprising an activated chlorinating reagent;
   b) reacting retinoic acid with the activated chlorinating reagent to provide retinoyl chloride;
   c) adding pyridine and a select arylamine to the reaction mixture and stirring the resulting mixture for a time and at a temperature sufficient for the arylamine to react with the retinoyl chloride and provide the arylretinamide.

2. The method of claim 1 further comprising the step of purifiying the arylretinamide from the suspension.

3. The method of claim 2 wherein purification is accomplished by treatment of the reaction mixture with solid phase reagents to remove unreacted starting materials followed by chromatography.

4. The method of claim 1 wherein step (a) is performed at a temperature ranging from about 0°C to room temperature.

5. An arylretinamide for inducing apoptosis in a cancer cell, said arylretinamide having Structure A, B, or C below:



Structure A

wherein

R_2 is H, OH, NO_2, CH_2 OH, a halide, or an alkyl comprising 1-4 carbon atoms,

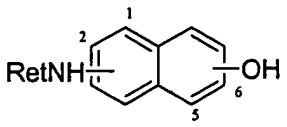
R_3 is H, OH, NO_2, CO_2CH_3, $CO_2CH_2CH_3$, $CO_2(CH_2)_2CH_3$, $CO_2(CH_2)_3CH_3$, CO_2H, CH_2OH, a halide, or an alkyl comprising 1-4 carbon atoms;

R_4 is H, OH, OCH_3, OCH_2CH_3, $O(CH_2)_2CH_3$, $O(CH_2)_3CH_3$, SO_2CH_3, $SO_2CH_2CH_3$, $SO_2(CH_2)_2CH_3$, $SO_2(CH_2)_3CH_3$, NH_2, $NHCOCH_3$, $NHCOCH_2CH_3$, $NHCO(CH_2)_2CH_3$, $NHCO(CH_2)_3CH_3$, $NHCOCF_3$, N_3, NCS, a halide, an alkyl comprising 1-4 carbon atoms, or $NHCOCH_2X$, wherein X is a halide;

R_5 is H, NO_2, $C(CH_3)_3$, $C(CH_2CH_3)_3$, $C((CH_2)_2CH_3)_3$, $C((CH_2)_3CH_3)_3$, CO_2CH_3, $CO_2CH_2CH_3$, $CO_2(CH_2)_2CH_3$, $CO_2(CH_2)_3CH_3$, a halide, or an alkyl comprising 1-4 carbon atoms, and

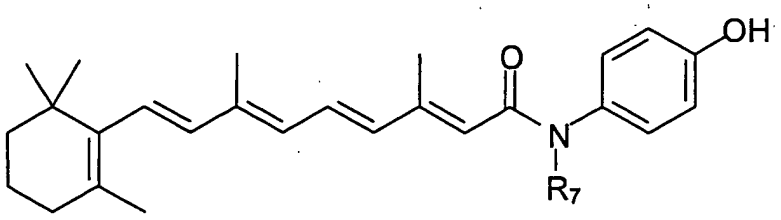
R_6 is H, CO_2H, CO_2CH_3, $CO_2CH_2CH_3$, $CO_2(CH_2)_2CH_3$, $CO_2(CH_2)_3CH_3$, a halide or an alkyl comprising 1-4 carbon atoms;

provided however that when R_2, R_3, R_4, R_5, and R_6 are all H, R_4 is not OH or OCH_2CH_3; and also provided that when R_3, R_5, and R_6 are all H, and R_2 is OH, R_4 is not CO_2CH_3.



Structure B

wherein the OH group is at position 2,4, or 5 when the retinamido group is at linked to position 1, and the OH group is at position 3 when the rentinamido group is linked to position 2.



Structure C

wherein R_7 is C_1 to C_4 alkyl.

6. The arylretinamide of claim 5 wherein the arylretinamide is a halohydroxyphenyl retinamides which comprises a phenyl moiety that is optionally substituted with an alkyl group .

7. The arylrentiamide of claim 6 wherein the phenyl moiety is substituted with a methyl group.

8. The arylreninamide of claim 6 wherein the halo group is an iodo group.

9. The arylretinamide of claim 5 wherein the arylretinamide is a hydroxy-alkylphenyl retinamides or hydroxy-alkoxyphenyl retinamide, wherein the alkyl groups attached to the phenyl moiety comprise from 1 to 4 carbon atoms.

10. The arylretinamide of claim 9 wherein the arylretinamide is a hydroxy-methylphenyl or hydroxy-methoxyphenyl retinamide.

11. The arylretinamide of claim 5 is a hydroxy-nitrophenyl retinamides or alkylsulfonyl-hydroxy retinamides.

12. The arylretinamide of claim 11 wherein the arylretinamide is an ethylsulfonyl-hydroxy, retinamides.

13. The arylretinamide of claim 5 wherein the arylretinamide is a hydroxy-napthylphenyl retinamide.

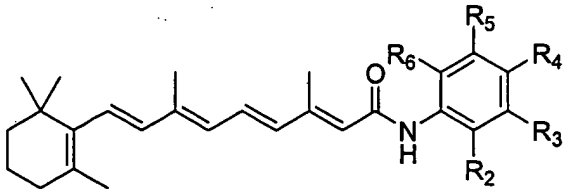
14. The arylretinamide of claim 5 wherein the arylretinamide is an N-alkyl(hydroxyphenyl) retinamides.

15. The arylretinamide of claim 5 wherein the arylretinamide is an aminophenyl retinamides.

16. The arylretinamide of claim 5 wherein the arylretinamdie is an alkylhydroxyphenyl retinamides.

17. The arylretinamide of claim 5 wherein the arylretinamide is a carboxy-hydroxyphenyl retinamides selected from the group consisting of *N*-(2'-hydroxy-3'-carboxymethylphenyl)retinamide, *N*-(2'-hydroxy-3'-carboxyphenyl)retinamide, *N*-(2'-hydroxy-6'-carboxymethyphenyl)retinamide, *N*-(2'-hydroxy-6'-carboxyphenyl)retinamide, *N*-(3'-hydroxy-4'-carboxymethylphenyl)retinamide, *N*-(3'-hydroxy-4'-carboxyphenyl)retinamide, *N*-(2'-hydroxy-5'-carboxymethylphenyl)retinamide, *N*-(2'-hydroxy-4'-carboxyphenyl)retinamide, *N*-(4'-hydroxy-3'-carboxymethylphenyl)retinamide, and *N*-(4'-hydroxy-3'-carboxyphenyl)retinamide.

18. An arylretinamide having Structure A below



Structure A

wherein

R_2 is H, OH, NO_2, CH_2 OH, a halide, or an alkyl comprising 1-4 carbon atoms,

R_3 is H, OH, NO_2, CO_2CH_3, $CO_2CH_2CH_3$, $CO_2(CH_2)_2CH_3$, $CO_2(CH_2)_3CH_3$, CO_2H, CH_2OH, a halide, or an alkyl comprising 1-4 carbon atoms;

R_4 is H, OH, OCH_3, OCH_2CH_3, $O(CH_2)_2CH_3$, $O(CH_2)_3CH_3$, SO_2CH_3, $SO_2CH_2CH_3$, $SO_2(CH_2)_2CH_3$, $SO_2(CH_2)_3CH_3$, NH_2, $NHCOCH_3$, $NHCOCH_2CH_3$, $NHCO(CH_2)_2CH_3$, $NHCO(CH_2)_3CH_3$, $NHCOCF_3$, N_3, NCS, a halide, an alkyl comprising 1-4 carbon atoms, or $NHCOCH_2X$, wherein X is a halide;

R_5 is H, NO_2, $C(CH_3)_3$, $C(CH_2CH_3)_3$, $C((CH_2)_2CH_3)_3$, $C((CH_2)_3CH_3)_3$, CO_2CH_3, $CO_2CH_2CH_3$, $CO_2(CH_2)_2CH_3$, $CO_2(CH_2)_3CH_3$, a halide, or an alkyl comprising 1-4 carbon atoms, and

R_6 is H, CO_2H, CO_2CH_3, $CO_2CH_2CH_3$, $CO_2(CH_2)_2CH_3$, $CO_2(CH_2)_3CH_3$, a halide, or an alkyl comprising 1-4 carbon atoms;

provided that when R_2, R_3, R_4, R_5, and R_6 are all H, R_4 is not OH OCH_3, OCH_2CH_3, or $O(CH_2)_2CH_3$; and also

provided that when R_3, R_5, and R_6 are all H, and R_2 is OH, R_4 is not CO_2CH_3 or $CO_2CH_2CH_3$.

19. A method of inducing apoptosis in a cancer cell comprising contacting the cancer cell with an arylretinamide of claim 1.

20. A method of treating cancer in a subject in need of said treatment, comprising administering one or more arylretinamides of claim 1 to the subject.

21. The method of claim 20 wherein said method further comprises administering calcium glucarate to the subject.